

REMARKS

Claims 23-34 and 36-43 are pending herein.

1. Claims 23-34 and 36-43 were rejected under 35 USC 103(a) as being unpatentable over Mannhart et al (2005/0173679). This rejection is respectfully traversed for the following reasons

A. Claims 23-34 and 36-42

The USPTO has the burden of establishing a *prima facie* case of obviousness, which requires the prior art references must teach each and every claim limitation. See generally, MPEP §§ 2142 and 2143. In particular, to establish a *prima facie* case of obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). As will be discussed in more detail below, the USPTO has failed to prove that all the claim limitations can be found in Mannhart. Therefore, the USPTO has failed to establish a *prima facie* case of obviousness.

Claim 23 is directed to a superconductive article comprising at least three superconductive films of the same material. Claim 23 particularly calls for the at least three superconductive films being disposed one atop another, atomically bonded to each other, and free of intervening bonding layers between films. The claimed feature of at least three superconductive films being atomically bonded is of particular significance, and is a result of forming processes according to embodiments of the claimed invention.

The USPTO relies upon Mannhart to teach aspects of Claim 23. Specifically, Mannhart discloses joining separate superconductive films through physical contact or an intermediate layer. In one embodiment, Mannhart discloses mechanically clamping two tapes, each including a single superconductive film, such that the two superconductive films are in physical contact (see FIG. 5 and paragraphs [0039] through [0042] of Mannhart). In another embodiment, superconductive layers from adjacent tapes are welded together using an intermediate layer having a lower melting point than the

superconducting layer (see FIGs. 6 and 7 and paragraphs [0043] through [0045]). Nowhere does Mannhart teach or suggest superconductive films of the same material disposed one atop another, atomically bonded to each other, and free of intervening bonding layers. Duplication of the superconductive films would require either physical bonding or the use of an intermediate bonding layer to join the superconductive films, as discloses in Mannhart.

Further, the USPTO alleges that mechanical bonding includes some level of atomic bonding or the layers would separate. In FIG. 5 of Mannhart, the mechanical joint between substrates holds the tapes together, forcing the contact between superconductive sheet 1 and superconductive sheet 2. The sheets are held in contact due to the mechanical compression between the two substrates, not atomic bonding between the two superconductive sheets. While Applicants acknowledge there is an atomic bonding between the superconductive sheets and the intermediate bonding layer shown in FIG. 6 of Mannhart, the superconductive sheets of FIG. 6 are not free of intervening bonding layers.

Additionally, the USPTO notes that Mannhart teaches MOCVD for deposition of the superconductive sheet to the substrate. However, Mannhart does not teach or suggest deposition of a superconductive sheet directly atop another superconductive sheet of the same superconductive material. In fact, the only layer deposited atop a superconductive sheet is an intermediate bonding layer which must be a different superconductive material as Mannhart teaches the intermediate bonding layer has a lower melting point than the superconductive layer.

Applicants submit that Mannhart fails to teach or suggest at least three superconductive films atomically bonded to each other and free of intervening bonding layers between superconductive films. Therefore, the USPTO has failed to establish a prima facie case of obviousness with respect to claim 23 because not all claim limitations are found in Mannhart. Applicants respectfully submit that claim 23 would not have been obvious over Mannhart. Claims 24-34 and 36-42 depend directly or indirectly from claim 23 and are not obvious over Mannhart for at least the same reasons as claim 23.

B. Claim 43

Claim 43 is directed to a superconductive article comprising a first, second, and third superconductive films of the same high-temperature superconductive material. Claim 43 particularly calls for the first and second, and second and third superconductive films being disposed one atop another, atomically bonded to each other, and free of intervening bonding layers between films. Further, claim 43 calls for the thickness of the superconductive layer to have a thickness greater than 2 microns. Claim 43 requires the second superconductive film to be atomically bonded to both the first and the third superconductive films.

As discussed above with regard to claim 23, Mannhart fails to teach or suggest superconductive films of the same material disposed one atop another, atomically bonded to each other, and free of intervening bonding layers. Further, Mannhart discloses superconductive double-layers, rather than a structure with three adjacent superconductive layers. As such, Mannhart fails to teach or suggest a second superconductive film atomically bonded to a first and a third superconductive films free of intervening bonding layers.

Applicants submit that Mannhart fails to teach or suggest at least first, second and third individually identifiable superconductive films of the same high-temperature superconductive material, the first and second, and the second and third superconductive films being disposed one atop another, atomically bonded to each other, and free of intervening bonding layers between superconductive films. Therefore, the USPTO has failed to establish a prima facie case of obviousness with respect to claim 43 because not all claim limitations are found in Mannhart. Applicants respectfully submit that claim 43 would not have been obvious over Mannhart.

Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicants' undersigned representative at the number listed below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

2/4/2008
Date

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